

LEM click

PID: MIKROE-2553

Weight: 38 g

LEM click carries the LTS 6-NP current transducer and MCP3201 ADC converter. The click can measure AC and DC current with exceptional speed, **up to 200 KHz**. LEM click is designed to run on either 3.3V or 5V power supply. It communicates with the target microcontroller over SPI interface, or directly with analog output.



DO NOT TOUCH THE BOARD WHILE THE EXTERNAL POWER SUPPLY IS ON!

Note: LEM click has exposed pins/pads. To stay safe take precaution when applying high voltage to the click. The click is to be used by trained personnel only when applying high voltage.

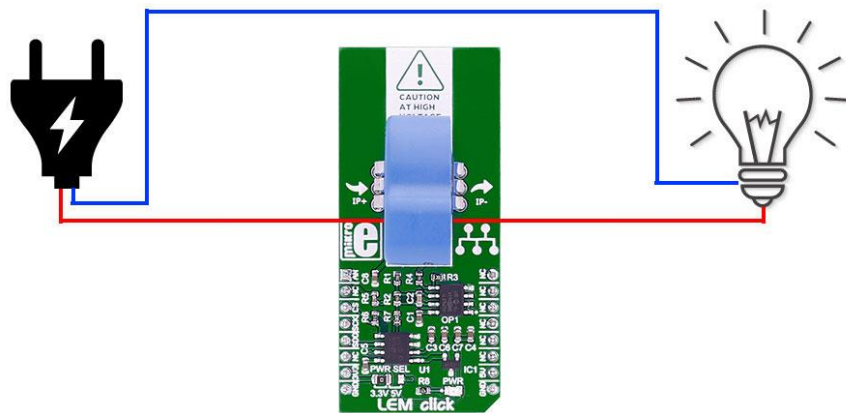
LTS 6-NP features

LTS 6-NP is a closed loop (compensated) multi-range current transducer using the Hall effect.

Intended for electronic measurement of currents: DC, AC, pulsed, mixed with galvanic separation between the primary circuit and the secondary circuit.

How it works

The conductor can be placed through the hole on the sensor:



There is on board ADC to read out the analog output value of the sensor, or it can be read from the AN pin.

MCP3201 A/D converter

The MCP3201 is a 12-bit Analog-to-Digital (A/D) Converter with on-board sample and hold circuitry. The device provides a single pseudo-differential input.

The MCP3201 is capable of sample rates of up to 100 ksps at a clock rate of 1.6 MHz.

Key features

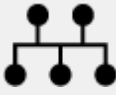
- LTS 6-NP current transducer
- Unipolar voltage supply
- Incorporated measuring resistance
- Low temperature drift
- Optimized response time
- MCP3201 ADC converter
- SPI interface
- 3.3V or 5V power supply

Specification

Type	Measurements
Applications	LEM click can be used for AC variable drives, Servo motor control, Power supplies, etc.
On-board modules	LTS 6-NP current transducer, MCP3201 A/D converter
Key Benefits	The click can measure AC and DC current with exceptional speed, up to 200 KHz.
Interface	SPI
Peripherals include	Onboard screw terminal
Input Voltage	3.3V or 5V
Compatibility	mikroBUS
Click board size	L (57.15 x 25.4 mm)

Pinout diagram

This table shows how the pinout on **LEM click** corresponds to the pinout on the mikroBUS™ socket (the latter shown in the two middle columns).

Notes	Pin	 mikroBUS™				Pin	Notes
		1	AN	PWM	16		
Analog output	AN	1	AN	PWM	16	NC	Not connected
Not connected	NC	2	RST	INT	15	NC	Not connected
Chip select	CS	3	CS	TX	14	NC	Not connected
SPI Clock	SCK	4	SCK	RX	13	NC	Not connected

SPI Master Input Slave Output	MISO	5	MISO	SCL	12	NC	Not connected
Not connected	NC	6	MOSI	SDA	11	NC	Not connected
Power supply	+3.3V	7	3.3V	5V	10	+5V	Power supply
Ground	GND	8	GND	GND	9	GND	Ground

Jumpers and settings

Designator	Name	Default Position	Default Option	Description
JP1	PWR.SEL.	Left	3V3	Power Supply Voltage Selection 3V3/5V, left position 3V3, right position 5V

LEDs and buttons

Designator	Name	Type	Description
TB1		SCREW TERMINAL	Current input to sensor

Programming

Code examples for LEM click, written for MikroElektronika hardware and compilers are available on [Libstock](#).

Code snippet

The following code snippet shows the example for LEM click, which calls functions that will initialize both the click and the display, and then show measured data.

```
01 static void systemInit( void )
02 {
03     LEM_init();
04 }
05
06 void main()
07 {
08     float currentRead;           /**< Read value */
09     char txt[10];                /**< Read value as string */
10     char oldTxt[10];            /**< Old read value */
11     char lab[10] = {0};         /**< Current label text */
12     char res;                   /**< Comparing of old and new value */
13
14     systemInit();
15     displayInit();
16
17
18     while(1)
19     {
20         currentRead = getCurrent_A();
21         sprintf(txt, "%2.3fA", currentRead);
22         res = strcmp(txt,oldTxt);
23         if(res != 0)
24         {
25             updateLabel(txt, 180, 140, lab);
26             strcpy(oldTxt,txt);
27         }
28         delay_ms(250);
29     }
30
31 }
```

Downloads

mikroBUS™ Standard specification

LTS 6-NP datasheet

LibStock: LEM click library

LEM click schematic